THE EDUCATOR.

"Promote, then, as an object of primary importance, institutions for the general diffusion of knowledge."—WASHINGTON.

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SCOTTISH PAROCHIAL SCHOOLS—DICK'S BEQUEST.

Through the kindness of a friend, we were some time ago favored with a report made to the Trustees of the late James Dick Esq. by their Secretary, which contains some interesting information regarding the working of the Scottish Parochial System. This information we shall endeavour to lay before our readers.

James Dick Esq. of Finsbury Square London, a native of Scotland, by his latter Will and Settlement bequeathed his whole Estate to Trustees to be applied "to the maintenance and assistance of the Country Parochal School-masters, as by law established in the three Counties of Aberdeen, Banff and Moray, excluding the Royal Burghs." The capital of the bequest at Martinmas 1833, when the Trustees entered on office amounted to £113,102 or upwards of $500,000.

The following rules are appointed by the Deed of Settlement to be observed in the distribution of the income arising from the fund.

1st That the Country Parochial School-masters by law established in the Counties above named shall alone be entitled to the benefit of the fund.

2d That the income thereof be applied in such a manner as not to relieve the Heritors or other persons from their legal obligations to support Parochial School-masters or to dimipish the extent of such support, and so as not to interfere with the rights or powers of Heritors and Presbyteries over School-masters or the Schools entrusted to their care, as the same rights or powers are by law ensured to them.

3d That the Trustees shall distribute the income of the said fund in such a manner as shall seem most likely to encourage active School-masters and gradually to elevate the literary character of the Parochial School-masters and Schools aforesaid, and for these purposes to increase, diminish or altogether to discontinue the salary or allowance to be from time to time made to all, or any of such School-masters without being accountable for so doing.

The first step which the Trustees took with a view to the discharge of the important trust confided in them, was to obtain returns from all the Parishes in the district comprehended in the Bequest, of the various circumstances and facts connected with education generally and more particularly with the Parochial Schools. These returns form a highly interesting and in some respects a very complete body of evidence. From these and from a visitation of the Schools within the district made by the Secretary the report to which we have referred was drawn up.

The population of the three Counties exclusive of the towns is 217,325. The total number of Schools of all descriptions within the district 528 and of Scholars 20,612. The proportion of persons attending School therefore is 9 to 100. The total expense of education is £11,596 19 7½ or 11s 3 each pupil, of which £5946 6s 1d in all or 5s 9½d each arises from fees payable by the Scholars, the remainder being defrayed by endowments.

The number of parishes containing Schools admitted or admissible to the bequest, is 123 the number of Schools 137, the average number of Scholars 7,674, the average age of entering School 5½ and of leaving 15. All the 137 Teachers had attended College except 20, the attendance having generally been for a period of 4 years. The average value of whole endowments and emoluments was £7,620, or £55 12s 4¾d each. The average dividend for the year ending Martinmas 1833 is £25 10. Teachers whole income £81 2 or under $400.

From these results the accuracy of which may be relied on the following inferences are deducible as to the working of the Scottish Parochial System.

1st. The population have outgrown the means of instruction provided by the Parochial Schools. In the above Counties little more than one third of the whole number of Scholars receiving instruction are taught in these Schools. The case is still worse in the great cities, the population of which has increased in a ratio still more disproportionate to the means of instruction.

This has arisen in a great measure, from leaving the erection of the School dependent on the will of those who have no direct interest in their maintenance, while they are assessed for their support. The same cause will lead to similar results in Pennsylvania unless guarded against.

2d. The Colleges have exerted a most beneficial influence on the Parochial Schools. In the absence of the Teachers Seminaries they have furnished the Schools with Teachers, of a higher order than could possible have been trained in these Schools themselves, and thus have sustained the character of the Schools and contributed to the important benefits which they have rendered to the Country. The Counties to which Dick's bequest applies, enjoy peculiar advantages in this respect. Numerous bursaries or scholarships have at various times been endowed for the support of Students at the Colleges of Aberdeen. These are decided by comparative trial and are frequently held by young men who afterwards become Teachers, some for life, others while prosecuting the study of divinity. Pennsylvania enjoys equal faculties, from the number of Colleges. Will her legislature render these available by establishing the requisite Scholarships!

The Trustees of Dick's bequest appear to have acted with great wisdom in the discharge of the difficult trust committed to them. Their first action regarded the filling up of vacancies in the Schools to which the bequest applies. It was evident that the attainment of the object of the trust must essentially depend on the selection of well qualified School-masters as vacancies occur. On the other hand the Trustees had no right to interfere in any manner in regard to the election which by law is vested in the Heritors and Clergyman, nor supposing they had, would it have been expedient for them by becoming parties to the appointment to fetter themselves in the exercise of the discretionary power of diminishing and withholding, which the Trust Deed conveyed to them. In regard to this point they have resolved not to interfere directly in the elections, but to appoint two Examiners before whom the School-masters who have been appointed since the Trustees entered upon office and who may be hereafter appointed to any of the Schools falling under the bequest shall undergo an examination as to their qualifications previously to being placed on the list as persons entitled to the benefit of the bequest.

The next question which occupied the attention of the Trustees, was one of equal difficulty, for the understanding of which, it will be necessary to recur to the history of the Scottish Parochial System. That System as is well known was coeval with the Reformation. The poverty of the Country and the disorders of the times, prevented indeed its firm establishment till after the Revolution, but long previously to this, the System had been introduced and its principles acted upon by the fathers of the Reformation. In the year 1696 the memorable act of Parliament was passed which declared that there should be a "School and a School-master appointed in every Parish" and provided salaries for the Teachers. The effects of this measure are thus described by an eloquent writer in the Edinburgh Review for June 1827. "There probably never was a nation where a taste for education was less to be expected than in Scotland at the time of the Revolution. Utter poverty, long persecution and every species of internal disorder seemed to make the country the natural abode of general and continued ignorance. Its disturbances however, were no sooner settled than the seed which had been scattered abroad began to spring even on that stony soil. A process was set at work in every Parish which prepared all ranks for the coming harvest. There being few other objects of literary ambition at home, successive races of persons distinguished by virtue and learning were attracted to the profession of teaching not so much by its emoluments as by the honor in which it was held. Under the intellectual and moral tuition of those excellent men the district in which each of them laboured, was gradually reclaimed. Amidst the various outlets which opened to a poor but enterprising people it was soon made manifest that education was its own reward; and the success of every individual who either raised up a name for himself in his own country or returned enriched with foreign wealth or honor increased that appetite for knowledge, which was not merely indulged in as a luxury but valued as one of the most certain and cheapest means of worldly advancement. As the public establishment had never been complete, private schools arose to supply its deficiencies, but the excellence of the Parochial Seminaries—secured chiefly by the respectability of the men who found it their interest to devote themselves to their duties—enabled them in general to triumph over all competition. The example of a right School was thus kept up in every parish, and each rival copying that visible mod-

el the whole system of education throughout the country was maintained steadily and quietly. The result realised almost all that the reasonable philanthropist could wish.—More good we are verily persuaded can never flow from the education of the people than what followed from it in Scotland during the 18th Century."

From the year 1696 down to 1803 nothing further was done by law to improve the condition of these institutions. The population had increased, while the number of Teachers remained stationary. The tenantry, the small merchants, manufacturers, all classes of the community, had advanced greatly, but the public Teacher had rather fallen lower. In 1803 however Parliament again interfered—an addition was made to the salary of Teachers and with a view to facilitate the erection of additional Schools in Parishes where this was desirable, the Heritors and Ministers are authorised on fixing a Salary of three chaldrons of oat-meal (varying in value from £50 to £60) to divide the same among two or more Teachers, according to the extent and population of the Parish. As the Heritors however pay a higher salary they are exempted from the obligation of providing School-houses, dwelling-houses and gardens for the Teachers among whom the salary is divided. The effect of this enactment has been, that in many cases Heritors finding the payment of the additional salary less burdensome than the providing School-houses, have sanctioned the establishment of additional Schools and the subdivision of the salary, has lowered the status and diminished the respectabilty of the School-master. The district to which the bequest applies comprehends eight parishes, in which the clause in the law of 1803 has been acted upon and these Parishes contain in all fourteen additional Parochial Schools five of which were erected subsequently to Mr. Dicks death. In nine of these cases the salary was under £13 and in two cases as low as £8 11s 1d. The Trustees after mature deliberation felt it to be their duty to limit the privilege of admission to the fund to such Teachers as had the minimum salary allowed by law which is at present £25. The report states that the Heritors of the excluded Parishes have subsequently raised the salaries to the amount required. The Trustees have further declared their intention of making the amount of salary an element in the principle of distribution, and the knowledge of this fact has led to an increase of salary in most of the Parishes within the district.

Had the Trustees not acted with decision in this matter Heritors would have fixed the salaries purposely at a low rate in expectation of the bequest, and thus to a certain extent appropriated to themselves the bounty designed for the School-masters.

The only remaining topic discussed in the Report, which our limits will permit us to notice, is the principle of distribution proposed by the Trustees. The School-masters interested, at an early period addressed a memorial to the Trustees, stating it as their unanimous opinion "that an equal division of the annual income, would best accomplish the purpose intended by the Testator, and be most satisfactory to all concerned." The Trustees however held, that, were they to order an equal division of the annual income without previous investigation or enquiry, they would be disregarding the intentions of Mr. Dick and be guilty of a neglect of duty. While therefore in distributing the arrears of dividends which had accumulated in the interval between the death of the Testator and their accession to office, they adopted the principle reccommended by the School-masters, they intimated that this principle was not to be held as in any degree fixed, for future division but that these must be dependant upon that activity and literary eminence of School-masters and Schools, the promotion of which is declared by Mr. Dick to be the object of the bequest.

It is proposed in the Report accordingly, that, the distribution be made upon a consideration of the relative circumstances of the different Schools in respect of the following particulars viz:

1. The number of Scholars.
2. Their attendance.
3. The higher branches taught.
4. The Salary.
5. The School fees.
6. The number of Scholars taught gratuitously.
7. The merit of the Teacher.

On the details of the mode in which effect is to be given to these elements respectively we cannot enter. We take leave of the document with expressing our wish, that in voting the application of the Smithsonian bequest to endow an Institution "for *the increase and diffusion of knowledge among men*," Congress may manifest the same regard to the intentions of the donor, which have characterized the proceedings of these Trustees. Several of the plans submitted to the Congress, appear to us to have very little reference to his expressed wish.

From the Connecticut Common School Journal.

Holland.—Primary Normal School at Haarlem.

The following interesting and important account of the Primary Education in Holland, from the pen of M. Victor Cousin, is the translation of part of an article which appeared some short time ago in a French periodical.

"The Primary Normal School of Haarlem, in the centre of Holland, is an establishment of the Dutch government. From the circumstances of having been founded so long ago as 1816, it has had sufficient time to become settled, to develope itself, and to show how much it is capable of effecting. The reputation of its director, whom M. Cuvier has already distinguished as an excellent master, and as an author of valuable educational works, is very great; indeed he is held up as the model of what a school-master ought to be. As an additional advantage, this Primary Normal School has been organized under the eyes of M. Van den Ende, general inspector of primary instruction, the individual who, with the celebrated Orientalist, M. Van der Palme, was mainly instrumental in arranging the law of 1806, and attended to its execution; he is considered in Holland as one of the fathers of the education of the people. An interesting conversation took place between M. Cousin and M. Van den Ende, of which the following is a brief account:"

"For fear of too much fatiguing M. Van den Ende, (who is aged and in delicate health,) I determined upon consulting his experience upon a limited number of questions among which I placed in the first rank religious instruction in the primary schools. Upon this as upon all others I found him greatly attached to the practice in Holland; and he said,—'Yes, the primary schools ought to be in an extended sense Christian, but neither Protestant nor Catholic. They ought to belong to no particular sect, nor to teach any creed, in order that even the Jews, without prejudice to their faith may attend them. *A school for the people should be for the entire people.* I do not approve of the master of the school giving any doctrinal instruction; it is the business of the clergy to impart instruction of this description out of school. I permit the master, in certain cases only, to have the catechism repeated; and even this not without inconvenience. *You are in Holland where the spirit of Christianity is widely spread, and still where great tolerance has existed for ages among the different sects.*' He appeared to me to fear the intervention of the priest or clergyman in the inspection of the school; a matter to which they attach so great importance in Germany, and upon which I have myself so much insisted."

"We then proceeded to converse with regard to the inspection of schools, and the mode of effecting it. 'As for that matter,' said he, 'persons who undertake it as a profession are necessary.' He regretted much that our law of 1833 had not instituted special inspectors, nominated by the government as in Holland and Germany, and as I pointed out in my report upon Primary Instruction in Prussia; and it was with great pleasure that he learned from me, that we had since supplied this deficiency, and that we now have an inspector of primary education in each department. 'But,' said he, 'your mutual instruction! what are you doing on this head? Do you hope with such a mode of teaching to be able to form men? For this is the true object of education.—The different descriptions of knowledge imparted at school are but means, the value of which must be estimated by a reference to this end. If you would really attain it, mutual instruction must be given up; this may indeed impart a certain quantity of instruction, but never effect education;—and let me repeat again, sir, education is the object of instruction.'

"'Nothing is more evident,' I replied, 'and, for my part, looking upon the subject as a philosopher and moralist I regard simultaneous instruction when private instruction cannot be had, as the only method which is suited to the education of a moral being: but I am still constrained to avow, that mutual instruction has still, in France, a popularity which is much to be deplored.'

"'Whence comes this?' said he, 'in a nation so intelligent as yours?'

"'From a fatal circumstance, of which the consequences are still affecting us. Under the Restoration the government endeavored to place primary instruction back into the hands of the clergy. The Opposition went to the contrary extreme. Some individuals, well-intentioned but superficial, and entirely unacquainted with the subject, having been by chance in England, in the half-barbarous manufacturing towns of that country, where, for want of better schools, they are but too fortunate to have the Lancasterian, mistook for a *chef-d'œvre* that which was but the infancy of the art, and allowing themselves to be dazzled by the sight of innumerable classes directed by a single master, assisted by little monitors taken from among the scholars. Some persons perceived a great economy in this mode of instruction; and then the eye was pleased by the order and mechanism of the exercises. It was this instruction, completely material, that they opposed to the ecclesiastical schools of the Restoration. Unfortunately mutual instruction has survived the struggles which preceded 1830.—Simultaneous instruction however, is making a progress step by step, and honest and disinterested persons are commencing to be alive to it. In Germany mutual instruction is held in little estimation; and I did not find in the whole extent of Prussia a single master who approved of it.—Nor have I seen a school for mutual instruction either at La Haye, or at Leyden.' 'You will not,' he replied, 'find a single such school in the whole of Holland. And it is not that we are ig-

norant of what mutual instruction is; we have studied it, and it is because we have done so that we reject it. *La Société du Bien Public*, which you, without doubt, are acquainted with through the report of M. Cuvier, proposed as a question the advantages and disadvantages of mutual and simultaneous instruction. The work which gained the prize examines with the greatest minuteness the method of mutual instruction and convicts it of insufficiency upon all points where there is a question of education. The author of this work is M. l'Inspecteur Visser.'"

Quiting M. Van den Ende. M. Cousin then visited M. Prinsen, the director of the Normal School.

"I explained to him my object. 'I desire,' I said, 'in the first instance to learn the constitution of the Primary Normal School of Haarlem, both its character and principles. I shall then beg of you to let me see it in action; allowing me in your company, to inspect it myself,—first of all the rules, then the results.

"'Can you communicate to me the rules of your school?'—'There are no rules,' replied M. Prinsen.

"The Primary Normal School of Haarlem is one in which the scholars are not boarded. Each pupil has a salary from the Crown, with which he provides for himself in town. No individual can be admitted who is not at the least fifteen years of age. Pupils come from all parts of the kingdom; they are admitted upon the reports of the inspectors and nominated directly by the ministry. There are three months for trial, during which the director makes himself acquainted with the pupils, tests and judges of their capacity.—After the lapse of the period of probation he makes a report to the minister, and upon this report the pupils are definitely admitted, when the real Normal School courses commences. There are altogether forty pupils. The duration of the whole course is four years; it regards not theory only, but practice also; and they there prepare the pupils to obtain the highest class in the examination of fitness (which answers to our highest degree of primary instruction,) and since in Holland this cannot be obtained before the age of twenty-five, it has been conceived that four years were not too much for the purpose of following the whole course of studies and exercises necessary for the formation of an accomplished schoolmaster. The greater part of the scholars remain four years at the Normal School; but they are not under the obligation to remain the whole of that time, for, although all prepare for the highest class, but very few pretend to it. The inferior schools are the great concern of the state; and it is for them that the Normal School labors, although it gives a higher education.

1. *Studies.*—Among the various objects of study there are three, viz: the Art of Instructing History and Physics, which, being considered as more difficult than other subjects, are taught at two different times during the period of the Normal course. The others, such as Natural History Geography, Calligraphy, Drawing, Singing and the Mathematics, are only taught once, and in succession.

"M. Prinsen undertakes with a single assistant the most important lectures of the Normal School. These lectures take place for the most part of an evening; but it is not at that time when the true Normal instruction is effected.—During the whole day the scholars are employed as assistants and even as temporary directors in the various schools of the town, according to the degree of capacity at which they have arrived.

"There are two thousand three hundred children in the Primary Schools of Haarlem, and they form permanent means of exercising the scholars of the Normal School. These two thousand three hundred children are distributed in a sufficient number of schools to enable the scholars of the Primary Normal School to be exercised each in his turn. This number of schools is here necessary; elswhere it is an advantage. 'The schools,' said M. Prinsen, and I was delighted to hear him say so, 'ought not to have too many scholars; for, when such is the case the master cannot exercise such a direct influence over them as will enable them to receive a lively impression and retain a clear recollection of what they have learned at school. Again when each school had too many scholars, there are too few schools; and then the assistance, from the circumstance of being obliged to wait too long before becoming masters, are in their turn discouraged, fall into the routine, or abandon their profession."

2. *Discipline.*—This is what I was most anxious to study, more especially in a Normal School in which the pupils lodged out of the establishment. I had seen very fair schools of this description in Prussia; but the best Primary Normal Schools, the admirable establishments of Potzdam and Brühl, are boarding schools. In Prussia it is generally considered that a boarding school is the most favorable for the education of young masters; that the director can, under such circumstances, exercise a greater influence, because it is more constant; and that in having one or two schools of different degrees attached to the Normal School, the scholars can be exercised as well as in the schools of the town away from the establishment. They also lay great stress upon the rude discipline of the school as a preparation for the severe life of a school-master.—The ideas which M. Prinsen communicated to me upon the subject of out-boarders, are as follows:—

"'In the first place, the scholars enter the school voluntarily for the sake of perfecting themselves in a profession which they purpose to follow, and which, consequently, is the great business of their lives. They are themselves inclined to order, and have not need of the discipline of a boarding school. Every pupil is, to use the expression, under the discipline of the moral dispositions which he brought with him to the school; those who have not these dispositions, or do not manifest their existence during the first three months are sent away. Those who pass the period of probation know perfectly well that the least fault will be severely visited,—that they depend entirely upon the director, and that their dismissal would be caused by the slighest disapprobation expressed by him.

"'They are forbidden to frequent any place of public resort. If they are seen in a public house, they are subjected to a severe reprimand, and for the second offence dismissed. They cannot absent themselves from the town for a single night without the permission of the directors.—They do not choose their own lodging, the director does this for them. He even pays for their board. The families who receive these scholars as boarders, are themselves interested in entering into the views of the director. It is an honor and a profit for a family of small fortune to be made choice of for receiving the pupils of the Normal School; on the slightest suspicion the scholars are taken away. The scholars are not considered in the house which they inhabit as strangers; but as members of the family, submitting to all its rules and customs. It is the business of the family always to know where there boarders are at every hour of the day. The director visits these houses every fifteen days at the least. He is in communication with the police who never fail to give him full information of all that falls within their observation.'

"It may be perceived that this is precisely the mode of directing the out boarding Primary Normal Schools in Prussia; and it may be seen with what difficulty the simple discipline of the boarding schools is supplied, how many precautions are necessary, the failure of one of which renders the whole machinery powerless. In speaking of the working of his own school. M. Prinsen said, 'Yes, with a safe concience I declare, that in this school every thing goes on generally well; and that the examples of disorder are so rare, that they cannot be considered as resulting from the system.'" M. Schreuder, who is at the head of the Normal School of Sierre, and who acted as interpreter to M. Cousin, spoke to the same effect with regard to his own establishment. "But" says M. Cousin, "with such directors as M. Prinsen and him, no system is bad. It is necessary also to take into account the tranquil dispositions of the young Dutch, and the Flemish character, which does not stand in need of a severe discipline. Both these gentleman agreed that the system of out-boarders only suited a small town; and M. Prinsen required a town or village of about two thousand inhabitants which should have about three hundred children to send to school for the purpose of affording means of exercise to the Normal School; and both agreed that such a school should have but a moderate number of scholars. I must not here omit to mention one of the best reasons which was given by these two intelligent individuals in support of a school of out-boarders. 'You say,' said they to me, 'that the boarding school with its severe discipline is a better preparation for the life of a school master. On the contrary, we are convinced that a young man who has passed several years in a Normal School of boarders is extremely embarrassed when he leaves it, and becomes sole director of his own actions; whereas in our system, a young man learns to conduct himself, to deal with mankind, and the life which he leads is an apprenticeship for the life which he is about to enter upon.'—This reason has weight, and I concede that examples are not wanting of young men who, after having been saints in the boarding school, when they have once quitted it, knowing no longer how to conduct themselves, commit follies, or at any rate are incapable of moulding themselves to any other description of life than that of their convent. But I do not conceive myself called upon to decide between the two systems: each is good, regard being had to the country, the age, and above all, to the individual whose business it is to put it into action; for I shall never cease to repeat—*As is the master, so is the school.* But the director of a Normal School of out-boarders ought to be a person of extraordinary merit, or there is an end of the establishment. The expense of the Primary Normal School at Haarlem costs the country 10,000 florins per annum—or about £840—for forty scholars; in this sum every expense

is included,—the repair of the buildings, the furniture, and the salary of M. Prinsen, which is 1600 florins, or a little more than £134 per annum. The director has in addition, an excellent lodging at the Normal School. Such is the constitution of the out-boarding Primary Normal School at Haarlem. We must now make known the results, and conduct the reader in the same manner as I myself was conducted by M. Prinsen and Schreuder through the schools of the town where the young masters are exercised. I saw there young men employed in the different duties of primary instruction. They were exercised under the direction of the masters of each school, who, most of them, are old scholars of the Normal School of M. Prinsen. We went through the different degrees of primary instruction. In the first instance a poor school, that is to say, an elementary gratuitous school; then two Tusschen-schulen, the same as our elementary schools, supported by the payment of the scholars; and then at the last the schools called French, that is to say, private schools, which answers nearly to our Ecoles primaires superieures, Bürger-schulen of Germany. I was much pleased at the activity and intelligence of these young masters; but what most struck me was the authority of M. Prinsen. As director of the Primary Normal School, he commands these young men,—as inspector of the district of Haarlem, he commands the masters themselves, and all these schools, scholars, and masters, of all Degrees and all conditions, are under him, as an army under its general; all obey his voice, all are inspired by his spirit and character. The method for teaching to read, of which he is the author, is ingenios (but I could not well enter upon it here,) and is that which universally made use of: the nine graduated tables which are made use of for carrying it into effect, are hung up in the school; and, absent or present, M. Prinsen is always there.

"I had seen in Holland primary schools of all sorts, with the exception of village schools. M. Prinsen proposed showing us some during a walk, which we made in the neighborhood. Both going and returning we visited several schools, and I must here avow that I was more surprised by them than by the town schools. I believe, indeed, that M. Prinsen had not chosen the worst to show us; but whether chosen on purpose, or offered by chance in the course of the walk, it is certain that neither in Prussia nor Saxony had I ever seen, I will not say better, but as good village schools. Imagine in a house of modest aspect, but of an exquisite and truly Dutch cleanliness, divided into two parts; on one side, a room sufficiently large to contain nearly all the children of the village, girls and boys, old enough to go to school; on the other side, the apartments of the master and his family: the room in which the school is held is lighted from above, with ventilators on the two sides; a certain number of tables, where the children are distributed according to their proficiency; a space between each table, sufficient to permit the master and scholars to move about with facility. On the walls are hung the nine tables of M. Prinsen, a large black board for the exercises, a model of the different weights and measures according to the decimal system, and that which I had not always seen in Germany, a second black table, upon which are traced some lines for receiving music, and the notes which it is necessary to write upon them for the singing lessons.

"I cannot express how much I was touched to hear them, in the little village schools, repeat at the music lesson the national air which I had already heard in the La Haye and Haarlem. It is simple and noble, it roused a love for one's country and king and inspires the soul with many exalted sentiments. Every great nation ought thus to have a national air, which can be sung from the great theatres even to the humblest village schools. The 'God Save the King' of the English is a noble song of this description. The national air of the Dutch is an imitation of it, and this is an inconvenience.

"I attach so much importance to the cultivation of the sentiment by music, that, if I was a minister, I would not hesitate to propose a prize for the best national air suitable for the schools of the people."

THE EDUCATOR.

EASTON, PA., MARCH 14, 1839.

Draught of a Revised Common School law, and of a Law relative to the preparation of Common School Teachers with Explanatory Remarks, and a set of District Regulations Prepared by Thomas H. Burrowes Superintendent.—Read in Senate Jan. 15, 1838.

Through the politeness of a member of the Legislature we have been furnished with a copy of the above documents, which we have carefully perused.

The Revised Common School Law first claims our attention. This document is a digest of the existing laws arranged under separate heads with such alterations as the experience of the late Superintendent has led him to suggest for the more effectual attainment of the object of the law. The greater part of these alterations are unimportant, relating to matters, which hitherto have been left to the discretion of the Superintendent, and School Directors, and which scarcely appear to call for legislative interference. Some of the alterations however are of a different character and on these we purpose to offer a few remarks.

The first important change proposed in the Revised Law, is the establishment of Secondary Districts, Committees, and Schools. We admit the desirableness of introducing into the Common School System the principles of Classification and after securing elementary instruction providing for advanced pupils, the means of continuing their studies. We are far however from coinciding in the opinion, expressed by the Superintendent, *that the aid given by existing laws to the primary grade of Common Schools is sufficient*, and that the time has arrived, when without further additional provision than that suggested in the Revised Law the System may be extended in the way proposed. Our reason for this opinion is to be found in the facts, that the average period during which the Schools are kept open under the law is 6 months, the average compensation of male Teachers $18,89 and of female Teachers $11,79 per month and that there is great difficulty in obtaining properly qualified Teachers even for the primary Schools. We fear, that there is a very general impression abroad, that more has been accomplished by the School law than it has been able to effect, that new Schools have been created, new Teachers called forth, and an entire new System introduced by the law. The truth is that, what were private Schools, have become Common Schools, under the same Teachers and in a great measure under the same regulations. The Schools are indeed kept open for a shorter time during the year than they formerly were, and hence probably has arisen the great saving of expence of which the Superintendent boasts. But in point of fact the provision for elementary instruction is far from being such as to permit of any diversion of the existing funds to the establishment of Secondary or Higher Schools. The additional appropriation of $50 proposed by the Superintendent to be paid by the State to each Secondary District School appears to us to be altogether inadequate to the end in view. The income of a Common School Teacher, thus augmented would not secure the services of a qualified person and unless this is done it, matters little whether the School is termed a primary or a Secondary one.

In respect then that the time which the Common-Schools are kept open is too short and the compensation allowed the Teachers altogether inadequate and yet, that neither of these can be increased without an increase of taxation, which might endanger the continuance of the law itself, we earnestly submit to the consideration of the Legislature whether the exaction of moderate fees, be not the simplest means for providing the funds necessary to the success and extension of the System. In our paper of 30, July last we have argued this matter fully. We shall only remark that at present fees are paid, and in the way of all others the most injurious.—The Schools are kept on by the Teachers at their own risk after the public funds are exhausted. The children of those parents who are sensible of the value of education, continue them at School while the others run wild during the intervals between the sessions of the public Schools and return at their reopening to disturb the order of the Classes and retard the progress of their companions. The same amount paid in small fees by all the pupils, would not be felt by the parents, and would secure to all the advantages of equal tuition. If the present System be continued we have little doubt that the inconveniences attending the interruption of the public Schools, will induce reflecting parents more and more to withdraw their children from the public Schools, and establish and support private Schools.

In the Chapter on the Powers and Duties of the Board of Directors, various clauses are introduced not to be found in any existing law. Among others there occurs the following paragraph. "They shall employ all the Teachers of the Common Schools, of the District by written contract with the President, fix the amount of Teachers salaries, *and dismiss incompetent, cruel negligent or immoral teachers at the end of any month.*" When we compare with this clause the careful provisions by which the rights of the Teachers are guarded in the School laws of other Countries: when we observe how entirely they are here placed on the footing of menials, engaged by the month and liable to be dismissed at the pleasure of their employers; we confess that we have little hope if such a clause be passed into a law, that the office of a Teacher will ever become one of any respectability or that any person will continue to hold it longer than circumstances render absolutely necessary.

The duties devolved in the School Directors are far too numerous and burdensome. The time requisite for their discharge is much greater than any individual however patriotic, can be expected to give. In the school law of Ohio, the Township Clerk of each Township is constituted Superintendent of Common Schools within his District, and on him is devolved the duty of preparing the Report to the general Superintendent and several other duties proposed in the Revised Law to be imposed on the Directors. The School-law of Ohio contains also the following clause.

"Sec. 27. That the Court of Common Pleas of each county in this State, shall, at their first term after the passage of this act, or at any subsequent term, appoint three competent men, to act as school examiners, who shall forthwith be

notified of their appointment by the clerk of said court, and hold their offices for three years, and until their successors are appointed; and the said court shall, from time to time, fill all vacancies in said board of examiners.

"Sec. 28. That said board shall, within ten days after their appointment, on being notified thereof, meet and organize by electing a chairman and clerk from their own body; they shall fix upon the time and place to hold quarterly meetings for the examination of all persons who wish to become teachers in their counties, and at such regular meetings any one of said board, on failure of the others to attend, shall be competent to examine candidates and give certificates, and the certificates so given shall be sufficient for any part of the county; and no person shall be employed as teacher in any common school, unless he or she shall first have obtained a certificate from said examiners, or one of them, of good moral character, and that he or she is qualified to teach reading, writing and arithmetic; and the said examiners shall certify, upon such examination, what other branches the candidates severally are qualified to teach, and no such teacher shall be allowed to teach in any common school, any branch not named in his or her certificate; the said examiners shall adopt such by-laws and regulations for the transaction of business as to them shall appear proper, and shall keep a journal of all their proceedings and the clerk shall receive from the county treasury one dollar and fifty cents per day, for each day spent in such examination at general meetings; and the county auditor shall give an order to said clerk for all moneys by him expended in the purchase of books, stationary, &c., for the purposes aforesaid; and the said board may, at the request of any candidate, hold special meetings as often as need be, and the candidates at such special meetings shall each pay, on receiving his or her certificate, fifty cents to the clerk for his compensation; and the said examiners may, whenever they think it advisable, determine what school books are the best adapted to the schools in their respective counties, and recommend the same to the use of the different school districts: *Provided*. That no certificate shall be valid more than two years after it has been given, and the said examiners may give their certificate for any shorter time, not less than six months: *And provided further*, That said examiners may, at their discretion, appoint examiners in distant townships, for the examination of teachers; examiners so appointed shall be governed by the rules and regulations prescribed by the county board of school examiners.

The adoption of a clause similar to the above would relieve the Directors from one at least of their many onerous duties and provide for its efficient performance. We submit to the consideration of the Members of the Legislature whether the appointment of two or more Inspectors to pass from District to District and aid the Directors in visiting and examining the Schools might not be attended with benificial consequences. These Inspectors are regarded as essential in Germany, France and Holland.

The Law relative to the preparation of Common School Teachers, merely provides for the appointment of a Commissioner to collect information on the Subject of Teachers Seminaries, and report to the Legislature at the next Session in January. From the preamble to the Bill, however, and from the Special instructions given to the Commissioner in Section 2d, we learn that the Institutions for the instruction of Teachers are to be so regulated as both to accomplish this desirable end, and also "to impart a free and thorough practical or business education to a large number of youth"—that they are to be in short the Practical Institutes whose principles we discused so full in our Numbers of 13th and 27th Aug., and 10th Sept. The Superintendent is very brief in his Explanatory Remarks, on Bill No. 2. Without deigning to notice the objections which have been urged to his views, he refers to his former Report, and contents himself with stating, that neither the experience nor the reflection of the past year have presented any reason for changing the opinions there expressed.

The proposal to appoint a Commissioner and to suspend all proceedings for another year, in order to wait for his Report appears to us unnecessary. If the Legislature determine on making the Superintendency of the Public Schools a separate office, as we trust they will, and as Mr. Burrowes himself recommends, what necessity is there for appointing a Commissioner to do what properly belongs to the duty of the Superintendent?—and if matters remain on their present footing, cannot the enquiries which he proposes be conducted as well by a Committee of the House, aided by the Secretary as by a Commissioner?

We will be much surprised, however, if such enquiries terminate in the bringing in a bill for the establishment, government, and maintenance of Practical Institutes, and that for the following reasons:—

1st. The erecting of separate Institutes, and providing gratuitous instruction for persons desirous of becoming Teachers would not accomplish the end in view. The individuals willing to become Teachers are not able to support themselves during the period of their attendance at the Practical Institutes, and those able to support themselves, are not willing to become Teachers. Farmers, Merchants, Mechanics, Manufacturers, Surveyors, or Engineers "these Institutes might send forth, but not teachers. The experience of the past is ample proof on this point. Gratuitous tuition has been offered in the Colleges and offered in vain. In the language of the Superintendent, in his former report, "hope from this quarter is dead."

2d. While the Practical Institutes failed to accomplish their ostensible object, the preparation of Teachers, they would operate injuriously, if they succeeded at all, in withdrawing from the Academies and Colleges many of those who now attend these Seminaries. The Common Schools have prevailed over private Schools, for one reason among others, that the instruction is gratuitous. Is it desirable that Practical Institutes should supersede Colleges and Academies?

3d. The expense attending the establishment and maintenance of these Practical Institutes would be very considerable. The amount required to erect buildings and endow Professorships, would maintain the Teachers during the period of their training. On which of these is it desirable that the public funds should be expended? on raising up rivals to existing establishments, many of them even at present struggling for existence; or on removing the grand difficulty which impedes the preparation of Common School Teachers?

4. Supposing the Practical Institutes erected, the experiment has still to be made whether pupils desirous of becoming Teachers, will present themselves.—Much expense has meantime been incurred, all of which is lost if the experiment fail. Supposing the proposition to endow Scholarships for educating Teachers in connexion with colleges adopted no preparatory expenditure is necessary and not a farthing will be drawn unless the experiment succeed, unless security be given that the individuals benefited will serve the State in the way proposed.

From the Address of David P. Browne.

VETERINARY ART.

The expenses of erecting a Veterinary college in the United States, may be estimated as follows:

The land, say 125 acres of land, at $100 per acre	$12,500
The buildings,	30,000
Library and apparatus,	5,000
	$47,500

I would propose to raise by subscription $50,000, in shares of $50 each, to be loaned the first three years without interest.

To induce subscribers, I would allow any one who took twenty shares, to send one pupil to the school; the interest on his shares compensating for the board and tuition. To any one who would subscribe for ten shares, I would allow to send one pupil upon paying one-half of his board and tuition. To any who would take five shares, I would allow the liberty of sending to the college infirmary for medical surgical treatment, one diseased or disabled horse annually; and any one who would subscribe for one share, should be entitled, annually, to have a horse examined by a Professor, and receive certificate of his soundness or unsoundness.

Such is the Institution I would propose. It is natural that I should prefer seeing it located in my native State, and to her I first offer it. There are in Pennsylvania upwards of fifty cities and counties. If in each, individuals could be found to subscribe for only twenty shares, the College would be endowed, and the benefits of the instsitution be spread all over the State. If ten from each county only could be obtained, is it probable that the Legislature would assist? It is not well to be too sanguine, but appears to me, that the objects of the Veterinary College are sufficiently *national* and *important* to induce Congress to interfere. The three Veterinary Colleges in France, are, as before said, Governmental Institutions, and the British Veterinary School has shared the bounty of Parliament. It is stated in Rees' Cyclopædia, that important savings have resulted to the English nation, from the appointment of Veterinary Surgeons, (graduates of this School) to the different regiments of British Cavalry.

From the Connecticut Common School Journal.

PUBLIC INSTRUCTION IN NEW YORK.

The following extract from Governor Seward's Message, presents, in a summary view, the present condition, not only of the Common School System of this great State, but also of her Academies and Colleges. The suggestions which follow are as applicable to our State as to New York. Our system of inspection is by no means as vigorous as hers. The plan proposed, of a County Board, formed a part of the original bill passed by the last Legislature, and in our case was to be composed of delegates from each board of school visiters. Nothing really efficient can ever be made out of this part of our school system as at present organized. If Connecticut, with such colleges, academies, private schools, and common schools, as are already in existence, would but take up the cause of Education, both in its primary and higher departments, with the spirit which her own prosperity and enduring fame, and the peace and prosperity of the whole country imperiously demands, she might have the best system of Public Instruction on this side of the Atlantic. But to our extract,

"Union College continues to maintain its high rank among the literary institutions of our country. It has three hundred students. Within the last ten years, eight hundred and seventy-four persons have received from its faculty their first degree in the arts.

"The College at Geneva enjoys scenery and associations eminently congenial to literature, and is happily located in regard to its sphere of usefulness. It is already beginning to justify the long delayed and limited public favour it has received. Its number of students is fifty, being an increase of forty within two years.

"Hamilton College is surmounting the embarrassments with which it has so long struggled, and gives gratifying promise of renewed usefulness.

"Columbia College, in the city of New York, contains one hundred and fifty-seven students, which is an increase of twenty-seven over the number of the preceding year. None of our scientific institutions have more faithfully and perseveringly maintained their standard of preparatory qualification, more diligently discharged the duties of instruction, nor sent into public life men of more eminent abilities, sound learning and elevated patriotism, than this ancient and venerable institution. It was excepted from the legislative, patronage bestowed at the last session. Is it the both wise and just to admit it to an equality with other institutions?

"In reference to all our Collegiate Institutions it affords me pleasure to state that their usefulness has been increased and their prospects are more auspicious than heretofore.

"There are one hundred and forty-six incorporated Academies, seventy-nine of which are subject to the visitation of the Regents of the University, and participate in the distribution of the Literature Fund. The act of 1837 renders the terms of admission to these advantages so easy, that it is probable all will soon be placed on the same basis. The number of students in all the Academies subject to visitation, is about ten thousand, and the number in all the Academies in the State is estimated to exceed fifteen thousand. The sum to be annually distributed hereafter, is $40,000, being an addition of $28,000 to the previous annual appropriation.

"There are ten thousand five hundred and eighty-three organized Common School Districts in the State, of which nine thousand eight hundred and thirty have maintained schools during an average period of eight months within the last year. The number of children between the ages of five and sixteen in the School Districts is five hundred and thirty-nine thousand seven hundred and forty-seven, of whom five hundred and twenty-eight thousand nine hundred and thirteen received instruction in the Common Schools within the year.

"The Colleges, Academies and Common Schools constitute our system of public instruction. The pervading intelligence, the diminution of crime, the augmented comforts and enjoyments of society and progressive refinement, the ascendency of order and the supremacy of the laws, testify that the system has been by no means unsuccessful in diffusing knowledge and virtue.

"It must nevertheless be admitted that its efficiency is much less than the State rightfully demands, both as a return for her munificence and a guarantee for her institutions. Some of our Colleges and Academies languish in the midst of a community abounding in genius and talent, impatient of the ignorance which debases, and the prejudices which enslave. The Common School System, but partially successful in agricultural districts, is represented as altogether without adaptation to cities and populous villages. The standard of Education ought to be elevated, not merely to that which other States or Nations have attained, but to that height which may be reached by cultivation of the intellectual powers, with all the facilities of modern improvements, during the entire period when the faculties are quick and active, the curiosity insatiable, the temper practicable, and the love of truth supreme. The ability to read and write, with the rudiments of arithmetic, generally constitute the learning acquired in Common Schools. To these our Academies and Colleges add superficial instruction in the dead languages, without the philosophy of our own; scientific facts, without their causes; definitions, without practical application; the rules of rhetoric, without its spirit; and history, divested of its moral instructions. It is enough to show the defectiveness of our entire system, that its pursuits are irksome to all, except the few endowed with peculiar genius and fervor to become the guides of the human mind, and that it fails to inspire a love of science or passion for literature.

"Posponed, omitted, and forgotten, as it too often is, amid the excitement of other subjects and the pressure of other duties, Education is, nevertheless, the chief of our responsibilities. The consequences of the most partial improvement in our system of Education will be wider and more enduring than the effects of any chance of public policy, the benefits of any new principle of jurisprudence, or the results of any enterprize we can accomplish. These consequences will extend through the entire development of the human mind, and be consummated only with its destiny.

"We seem at last to have ascertained the only practicable manner of introducing Normal Schools into the country. It is by engrafting that system upon our Academies. I earnestly hope you will adopt such further legislation as is required to make this effort successful.

"Provision has been made for the establishment of school district libraries. If I do not greatly err, this cheap and easy mode of bringing into contact with the juvenile powers the discoveries of science and the mysteries of the arts, will be the era of a new impulse to the cause of Education.—The Common Schools may resist every other influence, but they cannot withstand that of the general improvement of the community. I cannot too earnestly solicit your co-operation in the beginning of this wise and momentous policy.

"Visitation is the very principle of life to all seminaries of instruction. It acts upon both instructors and pupils by all the incentives which excite, and all the motives which encourage emulation. It would, if carried into effect, call to the aid of the state, in this mighty interest, the ally at once the most natural and efficient, parents themselves. The Regents of the University are, by virtue of their office, visiters of the Colleges and Academies, and inspectors are the legal visiters of Common Schools. How utterly this duty of visitation has fallen into disuse, your own observation and the public voice abundantly testify. The office of Inspector of Common schools is unhappily always involved in the political organization of parties. Generally it falls, by custom strong as law, upon young men engrossed by private affairs. Its duties confer, in public estimation, nothing of the dignity, and maintain little of the importance, which would induce their faithful execution. For this evil of our whole system, there is a remedy, simple, economical and effectual—the establishment of a Department of Education, to be constituted of a Superintendent appointed by the legislature, and a Board to be composed of Delegates from subordinate Boards of Education to be established in the several counties. The State Board might exercise a general supervision, with powers of visitation of the Colleges, and the County Boards the same powers in their respective counties. The duties of all these officers, except the Superintendent, ought to be discharged without compensation, and the tenure of office might be made so long as to ensure efficiency. I am satisfied the State abounds with competent individuals who would assume those duties, without other remuneration than the consciousness of rendering enlightened and patriotic service in the cause of Education."

TERRACULTURAL.

MEMOIR TO CONGRESS ON THE BEET CULTURE.

Concluded from our last.

Another proof of the practicability and great advantage of this improvement is the enthusiasm with which it was adopted and put into operation by the Germans themselves, who are generally very careful and prudent in all their speculations. They have already established extensive manufactories on the Rhine.

The importance of Mr. Schutzenbach's discovery is best proved by chemical analysis and examination of the physiology of plants. This analysis of the beet-root shows that 100 parts of the root contain—

86.3 parts of water,
3.2 parts fibrous matter,
10.0 parts of crystallizable sugar,
0.5 parts of mucilage.

By the new process, the water in the beet is evaporated, and there remain only 13.7 parts of dry substances, which consist of the sugar, mucilage and fibrous matter.

The sugar dissolves in cold or warm water almost instantaneously.

The mucilage is indissoluble in water; when in a dry state and mixed with water, it only swells to a slimy matter.

The fibrous matter is indissoluble, and has neither in the old or new process any injurious influence.

From this analysis we learn that the mucilage is the only substance which causes all the difficulties of the extraction of sugar. The principal process consists then in the separation of the mucilage from the sugar. But is this mixture a work of nature, or the result of the manipulations? or, does the cellular tissue, of which the beet-root is formed, contain the sugar in its pure state, separated form the mucilage?

These are questions as to the physiology of the beet which were first suggested by Raspail, a French chemist, (in his work on the physiology of plants, Paris, 1837,) and he solved these important problems by the following microscopic experiments.

"When a thin slice of the red beet-root is brought under the focus of a microscope it will be observed that the texture of the beet is formed of hexagonal cells, transparent, and of a purple color; these cells are crossed by white ones, four or five times longer than the purple cells; this tissue of white cells is crossed again by bundles of opaque cylinders, of a gray color, through which the spirals (*elements generateurs*) are observed

"When a drop of acid (*acide sulphurique albumineux*, which has the property of coloring saccharine substances purple) is put on this thin slice the colors change; the part which was purple turns yellowish, the long cells remain white, but the opaque cylinders become purple."

From this it follows that the cells naturally purple, enclose the coloring matter and the mucilage, and the opaque cylinders the sugar in its pure state. Thus the mucilage in the beet-root is separated by nature from the sugar, and mixed during the manipulation, which caused all the difficulties

of the extraction in the old process, when the mucilage was combined with the sugar in grating, pressing and even in defacation.

To separate this five-tenths parts of mucilage which the beet contains, occasioned not only the loss of considerable sugar but also labor, fuel and costly material, as for instance animal charcoal, blood, &c.

The new process acts entirely in conformity with the results of scientific investigation and the whole process is reduced to a simple operation, which gives a sure gain of 8 per cent of white refined sugar from 100 pounds of the raw beet-root.

The beets are now cut in thin slices, dried before any fermentation can take place, ground to fine powder, so that all cells are broken apart, and mixed with water, which dissolves the sugar before the mucilage begins to swell. The pure uncoloured liquor obtained is evaporated, and the sirup brought into moulds to crystallize.

These statements should be considered as a sufficient proof of the infallibility and practicability of the new improvement; and the introduction and general adoption of it in this country would be of the highest importance to the welfare of its population.

Some enterprising citizens of the United States sent agents to France to investigate the manipulations of this branch of industry; but the results have yet effected very little, and the sugar produced from the beet in this country is of no great account, which arises probably from the want of skilful and intelligent operators in the former complicated manipulations. But at present in Europe, the manipulations are reduced to a process much *simpler than brewing common table beer*, which can be comprehended and performed by every person. The period is not distant when farmers will produce their own sugar or at least raise and dry the beet ready for the manufacturer.

The general argument against the introduction of this branch of industry, that labor is too high in the United States is incorrect, when we consider the other great advantages which the United States have over every other country on the globe in almost every business, and especially in this branch of industry:

1st. The United States possess a climate which suits the beets better than any climate of Europe, because the summers are excessively warm which increases the saccharine property of the beet root.

2d. Plenty of cheap and rich land, subject to but a small tax.

3d. Inexhaustible stores of fuel from which the great natural water-courses, railroads, and canals branch, over the whole Union.

4th. Well-constructed labor-saving machines of all descriptions.

5th. An intelligent population, which when once acquainted with this branch of industry will soon bring it to great perfection—a population understanding the use and management of machinery and famous for improvements and inventions. Whereas in Europe, the land is over-taxed, high in price, and therefore the interest upon it considerable; subject to *tithes* and other feudal burdens; while the fuel is scarce and valuable and its transportation high and slow.—The population are entirely unacquainted with labor-saving machines, and possess very little mechanical ingenuity, while their enterprise is prohibited by the excise laws of their petty governments.

It is obvious that America overbalances, with its advantages the low prices of labor in Europe; and that she is able not only to provide herself with all the sugar wanted for home consumption, but also to supply other countries.

The sugar now produced in Louisiana averages only about 4½ pounds per head for the population of the United States or about 70,000,000 pounds annually, which is but a small part of our consumption, as enormous sums are yearly paid to foreign countries for sugar, as the following table shows, viz:—

1832,	imported into the U. States,		$2,933 688
1833,	do.	do.	4,752,343
1834,	do.	do.	5,537,829
1835,	do.	do.	6 806 181
1836,	do.	do.	12,514,551

This sum will annually increase in proportion as the population augments and their comforts and means improve.

By the adoption of this new branch of industry the sums at present paid for imported sugar would be in short a clear gain to the country; its agriculture would be improved, and thousands of acres of exhausted and deteriorated land would be again taken up and improved. To procure the necessary manure for this purpose, the farmer would be obliged to increase his live-stock, which would find during the winter season, plenty of food in the residuum of the manufactory. It would increase the consumption of sugar among the less wealthy class, and would make their condition of life more comfortable, and, of consequence, greatly extend the population of the country.

The manufacture of sugar is not confined to the beet and cane only. In Hungary there are at present manufactories which make *sugar from pumpkins*. The following article, translated from the *Hanoverian Communicator*, 1837, gives the particulars, as follows:

"A manufacturer in Hungary, for three years past, has used pumpkins for the manufacture of sugar. We have seen raw and refined sugar, also sirup from this manufactory and found the refined sugar equal to the colonial in every respect. The raw sugar is crystalline, coarse-grained, light-colored, and of more agreeable [melon-like,] flavor than the common raw beet-sugar; the sirup is of a blackish-green color and has also a melon-like flavor but is suitable for consumption. The juice obtained by pressure yields, on an average six per cent of sugar; but the water-melon of the south of Hungary is still more productive than the pumpkin of the north. The sugar obtained from the pumpkin is always considerable whether the fruit has been raised on rich or poor land. The manipulation is said to be more simple than the manufactory of beet sugar and requires less attention as the pulp and the juice may stand for three weeks without getting sour or losing any quantity of sugar. The juice during the process of evaporation does not rise in the boilers, and is not so liable to be burnt. The residuum is very good food for cattle. One acre produces 650 cwt. of pumpkins; twenty pumpkins; yield sufficient seed for one acre of ground. From the remaining seed a very good table oil of about 16 per cent. can be obtained.

"MARQUARDT."

Indian corn, at the period of tasselling, yields just half as much sugar as the sugar-cane; and it is astonishing that this well known fact did not induce persons to plant corn especially for that purpose.

To make use of green corn and pumpkins profitably, and to improve the crop of beet in quality and quantity, the following plan is therefore suggested which would keep a manufactory in operation all the year round.

We know that the beet requires a deep soil sufficiently previded with decomposed manure, as when planted in green manure they yield much less sugar and the operation is rendered more difficult; to prepare the field properly for the beet, it should be well manured, (no matter in what state the manure may be applied,) ploughed and planted in corn and pumpkins, and worked regularly as long as the pumpkins leave room for the horse-hoe. When the corn begins to form the tassel, it should be cut off, and the sugar extracted from it. The pumpkin has then all the influence of the sun to come to full maturity, and should be used, when ripe, for sugar. The following year the field would be in first-rate order for the beet, and the following rotation of crops, viz:

Indian-corn and pumpkins, with manure, } for sugar,
Beets,
Barley,
Clover,
Wheat,

An acre of good cultivated land yields, on an average 20 tons of the beet-root. Beets were sold this fall near Boston, for $5 per ton.

One ton of beets yields, when treated after the new method 180 lbs. of *white refined sugar*. The cost of manufacturing a ton of beets into sugar would be at a very high estimate, $6. One hundred and eighty pounds of refined beet-sugar would cost $11, or 6 1-10 cents per pound, for which we now pay, at the lowest rate 15 cents.

Mr. Norbert Rillieux of New Orleans, has recently invented an apparatus for reducing saccharine liquids, which has been patented in the United States, and is already tested.

This apparatus surpasses Howard's and Roth's, or any other invention of this description, not only in simplicity and cheapness, but also in the arrangement in the boiling of sugar, according with the laws of science and economy.

The liquor is reduced by two vertical cylinders heated by steam, over which the syrup is distributed in small quantities. One of the cylinders operates under a vacuum and entirely evaporated the condensed liquor by a low degree of heat, to hinder the formation of molasses—an improvement of the highest importance which till now, has never been accomplished. The syrup can be increased to any degree of the saccharometer desired, which is performed by the most ingenious and simple contrivance of a differential thermometer. This apparatus will greatly facilitate the manufacture of sugar, in regard to the economy of labor, fuel, and time, and the perfection of the product. This apparatus will rank among the most ingenious and important inventions.

The production of indigenous sugar in France was one of the main pillars of *Napoleon's continental system*; and the successful extraction of sugar from the beet was relied on as the surest guarantee of its stability.

That branch of productive industry, therefore, which the first statesman and captain of the age regarded alike as the means of conquest and the source of wealth and independence, cannot be considered a matter of indifference to the Government of this great and growing republic, whose duty and privilege it is to watch over the interest and welfare of its citizens—a Government aspiring to no conquest, yet whose enviable distinction it is to be regarded as the last hope of freedom—the last asylum of liberty.

The information imparted in the preceding pages collected as it is from the most authentic sources, it is hoped will be regarded as of the highest importance to any and every government charged with the duty of promoting the great interests of a nation.

Having traced the history and progress of the manufacture of the beet-sugar from the first discovered in Europe to the present time, through all its varied experiments and decreasing expenses, until no longer requiring the bounty of Government, but yielding a revenue, the only remaining inquiry is, how shall the American people avail themselves of the important advantages of this new source of national wealth and industry?

To acquire a correct and minute knowledge of this new branch of industry, (now practically unknown in this country,) it is necessary to visit Hungary, Germany, France and England, in order to examine all the recent and important discoveries and improvements relating to the manufacture of beet-sugar. To accomplish this object it would require the following qualifications;

1. A thorough knowledge of the old method of extracting sugar from the beet, and every apparatus hitherto used.

2. A thorough knowledge of agriculture, in order to ascertain the precise cost of the production of the raw material the influence which it has on the different systems of agriculture and the economy in regard to the feeding of cattle, &c.

3. A knowledge of chemistry and physics.

4. A knowledge of the languages of the different countries to be visited and a thorough acquaintance with technical and vulgar terms in mechanics and agriculture as well as the *patois* of the countries.

5. A knowledge of mechanics and the art of drawing in order to be able to delineate any apparatus at first sight and at a glance, as manufacturers are not always willing to have their apparatus examined minutely.

CHARLES LEWIS FLEISCHMANN,
Graduate of the Royal Agricultural Institute of Bavaria.

PATENT OFFICE,
Washington, December, 27, 1838.

PATENT OFFICE, *December* 28, 1838.

SIR: At the request of the author of the accompanying memorial I have the honor to submit the same to your care, for such dispositions as you shall deem best calculated to promote the wishes of Mr. Fleischmann and the interests of the country.

Allow me to state that Mr. Fleischmann is a gentleman of varied practical and scientific information, and has been for the last two years a resident of this city, and employed by me in the Patent Office. He is a native or Bavaria and was educated in the Royal Agricultural and Polytechnical school at Schlessheim, near Munich, at which he graduated with distinguished honor and was appointed *Inspector of the Public Domain*; an office of great responsibility, and rarely conferred but on men of advanced age; he was also director of the estates of Count Seinsheim, comprising twenty-four villages. Emigrating to this country with much experimental knowledge, and well versed in the French and German languages, he has at my suggestion draughted this memorial, which I believe cannot fail to be read with deep interest, comprising as it does the most important and latest discoveries in the manufacture of beet-sugar drawn from publications recently received at this office from Europe.

Should the Government desire the services of an agent to investigate this subject by visiting the manufactories of Europe, I would respectfully recommend the author of this memorial.

With the highest respect I remain your obedient servant,

HENRY L. ELLSWORTH.

Hon. RICHARD FLETCHER,
House of Representatives.

From Duncan's Sacred Philosophy.

HIBERNATION OF INSECTS.—VARIOUS STATES.

Turning from the consideration of insects eggs, let us look to some of the other means which the Creator has employed for preserving these minute animals during the rigorous season of the year. Some assume the chrysalis form, in which state they require no food, and can endure a greater degree of cold than in their more perfect condition, though they are much inferior, in this respect, to the eggs already mentioned. We shall take an example of this method of hibernation from the butterfly family, which is remarkable for the variety of modes by which the Author of Nature has provided for the safety of the different species. The history of the large white butterfly, which we select, is not perhaps so peculiar, among the insect tribes, as it is remarkable. It undergoes a double round of transformations in the course of the year, and its instincts are wonderfully adapted to the state of the season in each. From the chrysalis state, these insects assume that of caterpillars, about the last days of April, or the beginning of the following month. They first appear on wing in the middle of May, and, about the end of the same month, lay their eggs in clusters on the under side of cabbage-leaves. In a few days after, the caterpillars come forth, and continue to feed together till the end of June, when they are at their full growth. They then wander about in search of convenient places to fix themselves, where, after their change, the chrysalis may be sheltered. When such are found, they each fasten their tail by a web, and carry a strong thread of the same round their body, near the head; and, thus firmly secured, hang a few hours, when the chrysalis becomes perfectly formed, and divested of the caterpillar's skin. In fourteen days after this, the fly is on the wing.* Such is the history of their first series of transformations. But a long period of genial weather still remains, and a new succession of changes takes place. The butterfly lays its eggs, which are again converted into caterpillars, and about the end of September, these catterpillars become chrysalides, in which state they are prepared to pass the winter. Now, however, as if acquainted with the change which nature is about to undergo, they do not seek for protection beneath the fading vegetation which formed their previous retreat, but may be found hanging under the copings of garden walls, under pales, and in other places, where they can have a tolerable shelter from the inclemency of the weather, and yet be in the neighbourhood of their food, when they throw off this state of inactivity on the revival of nature in spring.

An instance of the hibernation of insects, in the *caterpillar* state, may be found in another branch of this family, that of the Marsh Fritillary. These small butterflies the color of which is a brownish orange, variegated with orange and black, are found in the caterpillar state, in the month of September. As the season advances, they spin for themselves a fine web, in which they congregate, and under covert of which they pass the winter. During this time, they are so nearly reduced to a torpid state, as to require no food; nor do they venture out of their covering, till invited by the warmth of spring. They have not yet come to their full size, and their growth is suspended during winter. If we pursue their history a little farther, we find that, about the end of April, they are in full maturity, and, suspending themselves by the tail, change into chrysalides. "Their mode of suspension," says Captain Brown, "is a singular instance of the extraordinary power of instinct. They first draw two or three small blades of grass across toward the top, and fasten them together by means of their silk, then hang themselves beneath the centre of these, each having his own little canopy. By this means, they are not only hidden from the sight of birds, but defended, in a great measure, from the damage they might otherwise sustain from windy and boisterous weather."*

In speaking of the hibernation of caterpillars, we must not forget to mention a beneficent provision by which many species are defended from the cold; we allude to the hair which at that season covers their bodies. The young Huber found some larvæ of the smaller species of ants, which spend the winter heaped up in the lowermost floor of their dwelling; and he remarks, that "those which are to pass the winter in this state, are covered with hair, which is not the case in summer, affording another proof of that Providence with which naturalists are struck at every step." Now, the very same thing occurs among various tribes of caterpillars, though it is by no means the case with all insects that pass the winter in this form. Even those which envelope themselves in silken shrouds, have generally this additional protection, of which the caterpillars of the brown-tail moth and mallow butterfly are instances. Some are thickly clothed with hair, a remarkable example of which occurs in the caterpillar of the drinker moth, whose very feet are covered with fine shaggy down. This insect does not become torpid in winter; and, as it feeds on grass, it can always find plenty of food.—"When a fine sunny day chances to break in upon the gloom of winter, this pretty insect may be often seen stretched at its full length on a low twig, or the withered stem of a nettle, basking in the sunshine with apparent delight."†

Some insects survive the winter in their perfect state, but these are comparatively few.—Several species of the genus *Vanessa* are of this number; but it is observed by Mr. Rennie, that this can only be positively affirmed of the female. It is certain, however, that, even in this state, insects will bear an almost incredible degree of cold with impunity. We extract two instances recorded in the publication of Mr. Rennie, on Insect Transformations, already alluded to.‡ "In Newfoundland, Captain Buchan saw a lake, which, in the evening, was entirely still and frozen over; but, as soon as the sun had dissolved the ice in the morning, it was all in a bustle of animation, in consequence, as was discovered, of myriads of flies let loose, while many still remained infixed and frozen round." A still stronger instance is mentioned by Ellis, in which "a large black mass, like coal or peat upon the hearth, dissolved, when thrown upon the fire, into a cloud of mosquitoes *(Culicidæ)*."

One other remarkable instance I shall mention, not only because it relates to another form of the hibernating principle, but also because it throws light upon a passage of Scripture, which naturalists were inclined to consider as founded on mistake. The passage to which I allude, is from the Proverbs of Solomon, whose wisdom and intelligence the infidel would be glad to impugn if he could. The words are,—"Go to the ant, thou sluggard; consider her ways, and be wise; which having no guide, overseer, nor ruler, provideth her meat in the summer, and gathereth her food in harvest."* It has been alledged, that the ant has no such instinct; that indeed if she had, it would be altogether useless to her, as, in winter, she falls into a state of torpidity; and that Solomon must, therefore, have mistaken for her winter store, the larvæ of this insect, which she tends with much assiduity, and which are found carfully deposited in her nest. But it is gratifying to the pious mind to observe in how many instances the discoveries of science throw light on difficult passages of Scripture: and prove the accuracy of its statements, even in matters of natural history, which it incidentally notices.—Of these instances this is one. It is true that, in climates such as that of Europe, where the cold of winter is intense, the ant does fall into a state of torpidity; and, as if she anticipated this state, she makes no provision for the severity of of winter. But it is different, at least with one species of ant, in India, named by Mr. Hope the *Provision* Ant, as is stated by Mr. Kirby, on the authority of Colonel Sykes. "These ants," says Mr. Kirby, "after long continued rains, during the monsoon, were found to bring up, and lay on the surface of the earth, on a fine day, their stores of grass-seeds, and grains of Guinea-corn, for the purpose of drying them. Many scores of these hoards were frequently observable on the extensive parade at Poona. This account" he adds, "clearly proves that, where the climate, and their circumstances, require it, these industrious creatures do store up provisions." The strong propensity of the ant, thus attested, serves to indicate the accuracy of Solomon's information; and, after this discovery, there can be little doubt, that, though the naturalist, who is too little acquainted with the animals of the Holy Land, has not yet ascertained the fact by actual observation, these insects do, in that country, follow a similar instinct, during its mild winter.

The immense variety of the insect tribes, and the inexhaustible resources of the Author of Nature in accommodating their instincts and functions to their peculiar circumstances and condition, precludes the possibility of comprising any thing like a particular detail of the manner in which the various tribes are enabled to pass the winter months, within the bounds we have prescribed to ourselves. The above sketch will suffice to afford some insight into these wonderful and diversified provisions, and to direct the reader to inquiries which will amply repay his industry, and which he will find growing upon him at every step. Some observations on the hibernation of the honey-bee, the snail, and the beetle, which will be found in subsequent papers, must close my observations on this part of the history of insects. Their still more astonishing faculties and modes of existence, in the other seasons of the year, will be considered afterward.

India rubber is an excellent substitute for leather in construting valves for pumps.

* Goldsmith's Animated Nature, Note by Captain Brown, vol. iv. p. 297.

* Goldsmith's Animated Nature, Note, p. 298.
† Insect Transformation, p. 193. ‡ Ib. p. 406.